

Claims

- [c1] 1 . A pointing control system, comprising:
a battery-powered handheld pointing device to enable the user to move the position of a pointer or a cursor presented on a display device by changing said handheld pointing device's heading direction without using any reference objects, and
a pointer display control unit that communicates with the handheld device, and interfaces a computer to control a pointer on the screen location and generate a control signal to notify the computer that a selectable identifier on display has been selected; and/or interfaces to a television to generate a replaceable image as a cursor and a set of selectable identifier images, which are superimposed onto the video signal and displayed on the screen.
- [c2] 2 . The pointing control system of claim 1 , wherein the handheld pointing device comprises a sensor unit and wherein the sensor unit comprises a set of orthogonally arranged spatial orientation sensors in which magnetic field sensors or gyro sensors are utilized for detecting said device's yaw (azimuth) angle and a set of accelerometer sensors or gyro sensors are utilized for detecting said device's pitch (inclination) angle, so that said device's device orientation in three-dimensional space can be determined without using any other reference sources in the local environment.
- [c3] 3 . The pointing control system of claim 1 , wherein the handheld pointing device comprises a selection unit wherein the selection unit comprises a set of buttons which allow the user to select a command identifier on the display, to calibrate the pointer location, and to control pointer appearance status, and of a circuitry to collect said buttons' activities.
- [c4] 4 . The pointing control system of claim 1 , wherein the handheld pointing device comprises a circuitry to collect, condition, process, and code the data from the sensor unit and the data from the selection unit.
- [c5] 5 . The pointing control system of claim 1 , wherein the handheld pointing device comprises a battery management unit which controls and conditions the power supply, and a method to monitor the sensors' activities and notify the

battery management unit to shut down components' power supplies in order to reduce power consumption during the handheld pointing device's idle stage.

- [c6] 6. The pointing control system of claim 1, wherein the handheld pointing device comprises a wireless transmission unit to transmit orientation data and user selection activity data to the pointer display control unit remotely.
- [c7] 7. The pointing control system of claim 1, wherein the pointer display control unit comprises a wireless receiver to intercept the orientation data and user selection activity data transmitted from the handheld pointing device.
- [c8] 8. The pointing control system of claim 1, wherein the pointer display control unit comprises a microprocessor, a memory module, a control circuitry, and supporting software to analyze and translate the handheld pointing device's orientation data to coordinates for the pointer on the target screen, and to calibrate the pointing direction of the handheld pointing device.
- [c9] 9. The pointing control system of claim 1, wherein the pointer display control unit comprises a circuitry to interface at least one of the target devices: (a) a computer system, to control the cursor's location on the screen in response to received data describing the handheld pointing device's spatial orientation, and to activate a computer function in response to user selection activities; (b) a television set, to draw a pointer image at a television screen location in response to received data describing the handheld pointing device's spatial orientation, and to superimpose the pointer image onto the television video display.
- [c10] 10. The control system of claim 9, wherein the pointer display control unit, in case of interfacing a television set, comprises a method to draw selectable identifiers on the television screen and a method detect if a selectable identifier on screen has been selected in response to the user's clicking activity on the handheld device buttons.
- [c11] 11. Command delivery apparatus, comprising:
a recorder unit to record and store remote control command codes for target devices, which can be one or more of the home entertainment equipments

including, but not limited to, a conventional television set, a digital television set, a digital TV set-top box, a satellite TV set-to box, a cable TV set-top box, a DVD player, a CD player, a VCR, a DVHS recorder, a laserdisc player, a VCD player, and an audio amplifier/transceiver, a base member, which is associated with a pointing system, to transmit the identity of a user-selected on-screen identifier or command code to the remote member, and a remote member, which faces the target devices, to receive the data from the base member and forward the infrared control command to target devices.

- [c12] 12. The command delivery apparatus of claim 11, wherein the recorder unit comprises an infrared receiver to intercept the remote control command codes from the target device's infrared remote control, a memory module to store the intercepted remote control command codes and user-selected identities, a circuitry to couple with the base member or remote member of said command delivery apparatus, and a method to store or retrieve the command code paired with a user-selected screen identity.
- [c13] 13. The command delivery apparatus of claim 11, wherein the recorder unit comprises software to prompt the user to activate a conventional remote control, to control the infrared receiver, to verify and process the received infrared data, and to store and archive the command codes.
- [c14] 14. The command delivery apparatus of claim 11, wherein the base member comprises a circuitry to interface a pointing control system and a wireless transmitter to transmit a user-selected screen identity or a control command code stored in the recorder unit to the remote member when the user applies a selection activity.
- [c15] 15. The command delivery apparatus of claim 11, wherein the remote member comprises a wireless receiver to intercept data from the base member, and an infrared transmitter to forward a selected command control code to the target device.